

DOCUMENT RESUME

ED 039 842

HE 001 566

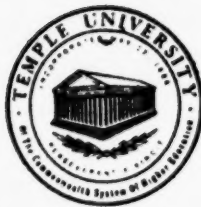
AUTHOR Kipnis, David; Resnick, Jerome H.
TITLE Experimental Prevention of Underachievement Among
Intelligent Impulsive College Students. Final Report.
INSTITUTION Temple Univ., Philadelphia, Pa.
SPONS AGENCY Office of Naval Research, Washington, D.C.
PUB DATE 1 Jul 69
NOTE 18p.

EDRS PRICE EDRS Price MF-\$0.25 HC-\$1.00
DESCRIPTORS *Academic Achievement, Academic Performance, College
Students, *Counseling, Counseling Effectiveness,
*Higher Education, Improvement, *Students,
*Underachievers

ABSTRACT

This study investigated several methods of preventing academic underachievement among university students identified by test scores as impulsive. Sixty-four impulsive entering freshmen with SAT scores of 1000 or more were assigned in equal numbers to one of four conditions: (1) paid counseling--students were paid a weekly amount, contingent upon their attending a weekly group counseling session; (2) paid math--students were paid weekly amount, contingent upon their demonstrating that they had completed their previous week's mathematics assignment; (3) paid control--students were paid a weekly amount with no contingent effort required; and (4) unpaid control--no direct interventions were attempted beyond an initial testing for impulsivity prior to the beginning of the semester. Sixty-four non-impulsive entering freshmen served as additional controls in each of the four conditions. The main results were that weekly counseling significantly improved the final grades of the impulsive students. Paying students to study mathematics was only effective among impulsive students with SAT scores of 1060 or more. Among this group, final grades were significantly improved in comparison to the grades of the control group. (Author)

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FINAL REPORT

EXPERIMENTAL PREVENTION OF UNDERACHIEVEMENT AMONG INTELLIGENT
IMPULSIVE COLLEGE STUDENTS

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Under Contract with:

OFFICE OF NAVAL RESEARCH
DEPARTMENT OF THE NAVY
CONTRACT NO0014-68-A-0264-0001
WASHINGTON, D. C.

July 1, 1969

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ABSTRACT

The purpose of the present study was to investigate several methods of preventing academic underachievement among university students identified by test score as impulsive. Sixty-four impulsive entering freshmen with Scholastic Aptitude Test scores (SAT) of 1000 or more were assigned in equal numbers to one of four conditions: (1) paid counseling -- students were paid a weekly amount, contingent upon their attending a weekly group counseling session; (2) paid math -- students were paid a weekly amount, contingent upon their demonstrating that they had completed their previous week's mathematic assignment; (3) paid control -- students were paid a weekly amount with no contingent effort required; (4) unpaid control -- no direct interventions were attempted beyond an initial testing for impulsivity prior to the beginning of the semester. Sixty-four non-impulsive entering freshmen served as additional controls in each of the four conditions. The main results were that weekly counseling significantly improved the final grades of impulsive students. Paying students to study mathematics was only effective among impulsive students with SAT scores of 1060 or more. Among this more intelligent group, however, final grades were significantly improved in comparison to the grades of the control group.

Experimental Prevention of Underachievement
Among Intelligent Impulsive College Students 1, 2, 3

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Psychological research has developed tests that can identify with modest success students liable to underachieve in school. One can anticipate that research will increasingly concern itself with the question of how to use this diagnostic information to prevent underachievement. Hopefully this use of test information will modify the current practice of preventing individuals likely to underachieve from entering college. Such a usage has increasingly revealed itself as being instrumental in maintaining inequities in our society by systematically eliminating disadvantaged minority group applicants. Furthermore, as psychological tests reveal that the causes of underachievement differ from one group to another, it seems clear that one form of treatment may not suffice for all underachieving groups.

The purpose of the present study was to investigate several methods of preventing academic underachievement among students identified by test scores as impulsive. Previous research has established that bright but impulsive students underachieved in a variety of situations. That is, in comparison to non-impulsive students, impulsive students had a higher dropout rate from high school (Kipnis, 1965a; Roessel, 1954), underachieved and dropped-out of college (Gough, 1965; Heilbrun, 1965; Kipnis, 1968b; Kipnis, Lane and Berger, in press) and performed unsatisfactorily in training school and on the job (Kipnis, 1965b). These studies also found that the relationship between impulsivity and performance was mediated by intelligence: the relationship being clearest for bright students. Among less intelligent students the relationship did not appear to hold.

One implication of the above studies is that it is possible to identify in advance, bright but impulsive individuals who are most likely to underachieve. Hence the information provided by the tests can be used for preventative treatment. As Spielberger, Denny and Weitz (1962) have noted, initiation of treatment after the student has gotten into academic difficulty has not proven very effective for elevating performance.

¹This research was partially supported by a grant from the Dean of Students Office, Temple University.

²The authors wish to thank the Temple University Counseling Center, and its director, Dr. Eleanor Isard, for the active cooperation and support given through their counselors and facilities in the execution of this study.

³The authors also wish to thank Mr. Edward Strong who worked long hours as the research assistant in this experiment.

Why do bright impulsive students fail? Clearly, lack of ability is not the reason. Past findings reveal that as intellectual level increases, so too does the failure rate among impulsive persons (Kipnis, 1965a). In order to understand the reasons for failure, one must consider the behaviors and attitudes that define the construct of impulsivity. Previous studies have found that impulsive persons are restless, easily bored and in constant need of new stimulation (Kipnis, 1968a). Such behaviors presumably produce poor study habits, inattention in class, and sporadic classroom attendance (Kipnis, 1968b). Thus therapeutic procedures devised for this group should aim at encouraging more systematic study and attention to school work.

It has also been found that impulsive persons do not experience much embarrassment, shame, or anxiety, in situations that have the potential for evoking such negative affect. This lack of emotional reactivity may prevent impulsive persons from experiencing genuine psychological distress over academic underachievement and inhibit the development of motivation to improve performance. Furthermore, clinical and experimental studies (Cairns, 1961; Hetherington and Klinger, 1964; Johns and Quay, 1962; Sarbin, Allen and Rutherford 1965) have found that attempts to motivate impulsive persons through appeals to sense of responsibility or through expressions of approval or disapproval from authority have little influence upon their behavior.

Since impulsive individuals are not motivated by distress, or social rewards resulting from the expectation of successful task completion, the question arises whether there exists any class of incentives which does have enough reinforcing strength to motivate impulsive persons into therapy designed to help improve their performance?

One class of incentives which has repeatedly been found to exert some control on the behavior of impulsive individuals is the awarding or withholding of material incentives. Thorne (1959) has stressed the importance of controlling the money of characterologically disturbed patients as a means of ensuring their participation in therapy. We have found that impulsive individuals stress the value of material possessions far more than non-impulsive persons (Kipnis, 1968a). Tyler (1965) and Staats and Butterfield (1965) reported that material reinforcements motivated aggressive, non-compliant students to improve their performance. Most recently Schwitzgebel (1969) demonstrated the effectiveness of cash payments in motivating delinquents to attend therapy. Taken together these findings suggest that material rewards may act as an effective substitute for more traditional incentives in motivating impulsive persons into a therapeutic situation.

In the present study material rewards were used as an incentive to maintain impulsive and non-impulsive university students in two treatment conditions designed to improve academic performance. Non-impulsive students were included as an added comparison group against which to estimate the influence of the two treatment conditions.

In the first treatment-condition, students were paid on a weekly basis, contingent upon their demonstrating that they had completed their previous week's mathematic assignment. Mathematics was chosen as the training area because it was previously found that impulsive students experienced greatest difficulty in this area (Kipnis, 1968b; Kipnis, Lane, and Berger, in press).

It was predicted that impulsive students would study their mathematics assignments in order to receive the weekly payment. This increased weekly effort should result in higher grades at the end of the semester.

The second treatment condition consisted of paying impulsive students to attend group counseling each week. This form of treatment is the major current method used to elevate the performance of underachieving students. It was our expectation that impulsive students would not benefit from counseling. This belief was based upon the generally held view that characterologically disturbed individuals distrust and reject such relationships. Kaufman and Heims (1959) and Bandura and Walters (1959) have proposed that underlying this lack of responsiveness to therapeutic and quasi-therapeutic relationships is a problem of deep conflict concerning dependency needs.

Procedure

The subjects were entering Temple University freshman with total Scholastic Aptitude Test (SAT) scores of 1000 or more on the combined verbal and mathematics subtests. They were selected from low income families as determined either by the Temple University financial office on the basis of applications filed for financial aid, or by a review of the parents' occupation. The reason for restricting the sample by economic level was to insure that the financial incentive offered would be attractive to the participants.

The selection of subjects occurred in two stages. Prior to the beginning of the semester, incoming freshmen identified as being of low income level were contacted by letter and asked to visit the university in order to complete a set of questionnaires relating to their background and interests. They were told they would also be contacted at the end of the semester to obtain information on their attitudes toward Temple University. Included in the questionnaires were two self-description scales for classifying impulsivity. Of the 226 students contacted, 201 were tested.

Following the initial testing, a sample of the above students, classified as being impulsive or not, were invited by letter to participate in an experimental scholarship program designed to help them defray weekly living expenses. Weekly payments of \$10.00 per week were offered. Only one student (non-impulsive) refused to participate, stating he did not need the money. Groups of 16 impulsive and 16 non-impulsive students were randomly assigned to each of four conditions. The conditions were: (1) Paid-math; (2) Paid-counseling; (3) Paid-control; (4) No pay-control. Students in the No-pay control were not contacted beyond the initial letter asking them to complete the questionnaires. The program and payments were started at the beginning of the second week of the first semester. Since the university had just adopted a 13 week semester period, payments were made for 12 weeks, for a maximum possible total of \$120.00 per student.

a. Paid-math condition. Students assigned to this condition were told that in order to receive their \$10.00 per week scholarship payment they would have to maintain a satisfactory level in their mathematics course. Evidence that they were maintaining this level would be demonstrated by their passing a weekly quiz. The students were enrolled in either a basic course in finite mathematics or a more advanced course in calculus.

The quizzes were prepared by a member of the Mathematics Department and followed the teaching syllabus for each course. Each quiz consisted of 10 to 15 multiple choice questions. Testing time ranged from 15 to 30 minutes depending upon the student. The relevance of the quizzes to the course content was high, as estimated by correlations with final mathematics grades. Scores on the quizzes summed over the first six weeks correlated .63 ($p < .01$) with final mathematics grade and .72 ($p < .01$) when summed over the entire 12 tests.

The tests were administered each Monday by an assistant of the experimenters', in a setting apart from the regular classroom. They were graded immediately, and if the student passed he was paid \$10.00 cash on the spot. Math instructors were not aware of this program on any systematic basis. For the first three weeks all students were given passing grades. After this time, a passing grade of between 50% to 60% was set. One impulsive student was lost from this condition halfway through the semester when he resigned from the study after finding that he could not pass the quizzes. A second impulsive student withdrew, after six weeks, from the university to join the army. Both of these students' grades were included in the data analyses. It is important to note that no attempt was made to provide students with additional tutoring at the time of the weekly quizzes. Feedback was limited to telling students which items on the quiz they had answered incorrectly.

b. Paid-counseling. Students met once a week in groups of six to nine. There were two counselors assigned to each group. Counseling lasted for approximately 45 minutes per session. The students were paid \$10.00 each week, conditional upon their having attended that week's meeting. Of the 32 students in this condition twenty-five attended all 12 meetings, 5 students missed one meeting, and 1 student missed two meetings. No student missed more than this number of meetings except for one impulsive student who dropped out of school halfway through the semester. This student's grades were included in the data analyses. We also inadvertently included one impulsive student attending the University high school. This student was dropped from the analysis.

The group discussions were open-ended with the general focus on academic adjustment and vocational goals. There was also some discussion of personal adjustment. A fair amount of discussion centered on university requirements or university indifference to the student. Counselors reported that the students were not very motivated to attend these sessions. Most of the students stated they didn't have any problems; their attendance being merely to receive the \$10.00. The majority of counselors felt that the lack of motivation among the students precluded the establishment of a genuine counseling situation.

The counselors were members of the university counseling center and all had graduate degrees and extensive previous experience in counseling and clinical work with students. Because of class scheduling difficulties, no attempt was made to arrange groups in terms of impulsivity score. Rather, groups were scheduled solely in terms of there being enough students with a common free period.

c. Paid-control. This group merely came in once a week to collect their scholarship payment. We inadvertently included one impulsive and two non-impulsive music majors in this group. Since these three students took a completely different set of courses, they were not included in the data analysis.

d. No pay-control. This group was contacted at the end of the semester to fill out a set of post-semester questionnaires. Otherwise the group had no contact with the experiment. One high impulsive student dropped out of the University prior to completing the semester. His grades were included in the data analysis.

Questionnaire Data

At the beginning of the semester all students were asked how much money they expected to actually have for weekly living expenses. They were also asked how satisfied they were with this estimated amount.

Another questionnaire asked students to describe themselves on a set of bi-polar rating scales containing such items as: dependable-undependable; dislikes school-likes school. At the end of the semester students again completed the bi-polar scales and answered questions concerning their attitudes toward the experiment and toward the university.

Criteria

a. Mathematics final grade expressed on a 0 to 4 scale (F=0 and A=4) was the first criterion used. In addition, the mathematics grade was dichotomized at the median of the grade distribution into those who received a B or better and those who received a C or less. Dropouts were assigned a grade of F.

b. Overall Final Grade expressed on a 0 to 4 scale (A=4) was the second criterion used. In addition the overall final grade was dichotomized at the median of the grade distribution into those who received 2.51 or better (C+) and those who received 2.50 or less. Dropouts from the university were assigned a grade of 0.75.

Analysis

Analysis of variance was used to evaluate the influence of the treatment conditions upon the grades. The dichotomized grades were analyzed through chi square. Since our major predictions concerned impulsive students, separate statistical comparisons between treatment conditions and the control condition were made at each level of impulsivity.

Previous research at the University had found strongest results for impulsivity among students with upper third SAT scores of 1060 or more (Kipnis, 1968b). The present study used a median cut-off score on the SAT of 1000. Since previous studies found that the higher the intellectual level of students, the stronger the relations between impulsivity and behavior, a second set of analyses were carried out using only students with SATs of 1060 or more. Thirty-seven students (33%) were eliminated in this second analysis because their SAT scores were less than 1060.

For the total sample there were no differences in SAT scores between the experimental conditions ($F < 1$) or between impulsive and non-impulsive students ($F < 1$). However for the subsample of students with SAT scores 1060 or more, impulsive students in the paid-math condition had higher SAT scores than impulsive students in the control condition. This difference in SAT scores presented no problem in analyzing mathematics grades since SAT scores correlated $+0.05$ with these grades. However, SAT scores were correlated with final semester grades ($r = .28$) among impulsive students. Accordingly analysis of co-variance was used in the final grade and analyses as a means of equating groups on SAT scores. In the chi square analyses, samples were matched for SAT scores, when the overall chi square data yielded statistically significant findings. Chi square was then re-computed on these matched students.

Measures of Impulsivity

An index of impulsivity was obtained by adding the unweighted scores from two purported measures of character structure-- the Socialization Scale from the California Psychological Inventory (Gough, 1965) and the Insolence Scale (development of this latter scale is given in the appendix). In a sample of 573 male Temple University students the two scales correlated $.45$, suggesting that both scales were measuring aspects of the same personality dimension. The assumption that the scales were measuring aspects of the same personality dimension was examined in a previous study (Kipnis, 1968b) in which both scales were correlated separately and in combination to the various dependent measures used in that study. In all instances, the relationship between the scales and the various dependent measures, when considered separately, were in the same direction and almost of equal magnitude. One can interpret these findings to mean that both scales are measuring differing aspects of the same basic personality dimension.

Both scales contributed relatively equal weight to the combined impulsiveness index, as indicated by the fact that the standard deviations of both scales were almost exactly equal. Students with impulsive index score in approximately the top third of the Temple University distribution (37 or more) were designated as impulsive, and persons with bottom third scores of 29 or less were designated as non-impulsive. The appendix provides a more detailed description of the scales.

Money as an Incentive

The present study was predicated on the assumption that impulsive students valued money as an incentive whereas they did not value other incentives, especially social ones. Hence money could be used to direct them into the several therapeutic situations studied here. Support for this assumption was found in terms of impulsive students' responses to the questionnaire items concerned with weekly living expenses. At the beginning of the semester, impulsive students estimated they would have \$13.81 available for weekly living expenses and non-impulsive students estimated \$13.14. In response to the question of how satisfied they were with this amount, 55% of the impulsive students and 21% of the non-impulsive students stated they were dissatisfied with the money they had available ($\chi^2 = 11.28$, $df = 1$, $p < .01$). At the end of the semester all students rated degree of satisfaction with the amount of money they had available during the semester for weekly expenses. Impulsive students were once again significantly less satisfied

than non-impulsive students ($F=9.75$, $df\ 1/112$, $p < .01$)⁴

Results

Control Analysis

A comparison of the paid-control group to the unpaid control group with respect to mathematics grade and to final semester grade revealed no differences in performance between these groups ($p < .50$). Whatever benefits providing students with a weekly allowance may have, these benefits did not relate to academic performance. In the subsequent analyses the paid and unpaid control groups were merged to provide a more stable baseline for estimating the effects of the paid-math and paid-counseling conditions.

The next analysis compared the grades of impulsive students to non-impulsive students in the combined control condition. Impulsive students in the control condition had a final grade-point average of 2.01 and non-impulsive students had a final grade-point average of 2.68. By F test, this difference in overall achievement was significant beyond the .01 level ($F=17.62$, $df\ 1/59$). Only 13% of the impulsive students had final grades above the median of 2.51, while 63% of the non-impulsive students had above median grades. These findings support our original contention that tests of impulsivity could identify in advance students likely to underachieve.

Mathematics Grades. Given that impulsive students did underachieve. We next considered the question of whether the experimental manipulations were effective in elevating their grades. The results were nonsignificant when mathematics grades were considered alone. Table 1 shows these findings. Despite the fact that the mathematics grades in the paid-math condition were elevated in the predicted direction, they were not significantly higher than those in the control condition. The paid-counseling conditions also did not differ significantly from the control condition.

Table 1
Average Mathematics Grades

	Average Mathematics Grade						% Above Median Mathematics Grade (B or better)		
	Paid Math		Paid Counsel.		Control		Paid Math	Paid Counsel.	Control
	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	%	%	%
Impulsive	2.25	(16)	2.47	(15)	1.97	(31)	50%	53%	35%
Non-impulsive	2.88	(16)	2.80	(16)	2.57	(30)	75%	60%	53%

⁴Because of students leaving school and missed appointments, not all participants in the study completed the post-semester questionnaire.

While the results for all students were not significant, the sub-analysis among students with SAT scores of 1060 was significant (see Table 2). Both the analysis of variance and the chi square analysis found that impulsive and non-impulsive students in the paid-math condition had significantly higher mathematics grades than students in the control conditions ($F=4.46$ df 1/60 $p < .05$; chi square = 6.19 $p < .02$). Mathematics grades in the paid-counseling condition did not significantly differ from the control condition.

Table 2

Final Mathematics Grades
(Students with SAT scores of 1060 or more)

	Average Mathematics Grade						% Above Median Mathematics Grade (B or better)		
	Paid Math		Paid Counsel.		Control		Paid Math	Paid Counsel.	Control
	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	%	%	%
Impulsive	3.00	(10)	2.46	(11)	2.37	(19)	80%	54%	46%
Non-impulsive	3.31	(13)	3.09	(12)	2.64	(22)	85%	73%	54%

Final Semester Grades. As shown in Table 3, the final grades of non-impulsive students were not increased by either treatment condition. However, the final grades of impulsive students were significantly elevated by the paid-counseling condition ($F=5.40$, df 1/44, $p < .05$; chi square = 11.06 df $p < .01$). The paid-math condition also elevated impulsive students' grades. However, the analysis of variance comparing the paid-math and control condition was not statistically significant, although the chi square comparison of the same data was significant ($\chi^2 = 5.60$, df 1, $p < .05$).

Table 3

Overall Semester Grades

	Average Semester Grade						% Above Median Semester Grade (2.51 or better)		
	Paid Math		Paid Counsel.		Control		Paid Math	Paid Counsel.	Control
	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	%	%	%
Impulsive	2.22	(16)	2.49	(15)	2.01	(31)	44%	60%	13%
Non-impulsive	2.66	(16)	2.62	(16)	2.68	(30)	69%	62%	63%

The final semester grades of students with SAT scores of 1060 or more are given in Table 4. Here again it can be seen that the experimental treatments had little influence upon the grades of non-impulsive students. However among the more intelligent impulsive students, both the paid-math condition and the paid-counseling condition significantly elevated final grades. This can be seen most clearly in terms of the numbers of impulsive students in each condition who exceeded the median final grade 2.51. The numbers exceeding this median grade in both the paid-math and paid-counseling conditions were significantly higher than in the control condition. ($p < .05$ by chi square test controlling for SAT score). The parallel findings using analyses of co-variance revealed that grades in both the paid-math and paid-counseling conditions exceeded the control condition beyond the .10 level of confidence.

Table 4

Overall Semester Grades
(Students with SAT scores of 1060 or more)

	Average Semester Grade						% Above Median Semester Grade (2.51 or better)		
	Paid Math		Paid Counsel.		Control		Paid Math	Paid Counsel.	Control
	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	%	%	%
Impulsive	2.54	(10)	2.50	(11)	2.07	(19)	70%	64%	16%
Non-impulsive	2.79	(13)	2.81	(12)	2.66	(22)	77%	75%	64%

Sub-analysis of Final Grades. The higher final grades of impulsive students in the paid-math condition could be due to the specific contribution of their higher mathematic grades or to a general elevation of all their course grades. To investigate these alternatives, a new final grade was computed for each student which excluded the mathematics grade. Table 5 shows this corrected final grade. It can be seen that impulsive students' grades in the paid-math condition remained elevated even after the contribution of mathematics has been removed. ($p < .05$). Apparently paying bright, impulsive students to study math influenced their academic performance in their other courses as well.

Table 5

Overall Semester Grades Minus Mathematics Grade
(Students with SAT scores of 1060 or more)

	Corrected Semester Grade						% Above Median Corrected Grade (2.50 or better)		
	Paid Math		Paid Counsel.		Control		Paid Math	Paid Counsel.	Control
	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	%	%	%
Impulsive	2.43	(10)	2.48	(11)	1.92	(19)	60%	54%	16%
Non-impulsive	2.63	(13)	2.75	(12)	2.65	(22)	61%	83%	59%

Attitudes. The scholarship payments had no significant influence upon paid-students' attitudes toward the University when compared to the views of the non-paid controls. This was true among all students and among students with SAT scores of 1060 or more. There was however a trend for impulsive students to express greater dissatisfaction with the amount of interest the University took in its students ($p < .05$). In terms of self-ratings, or changes in self-ratings, from the beginning to the end of the semester, once again there were no significant changes that could be attributed to the experimental treatments. Of interest however was the finding that impulsive students at the beginning of the semester, when compared to non-impulsive students, described themselves as less dependable ($p < .05$), as having poorer study habits ($p < .08$) and as disliking school ($p < .01$). These findings are consistent with our original description of impulsive students. Finally students in the paid-math condition rated their condition as more helpful than students in the paid-counseling condition ($p < .05$).

We may conclude that while the two treatment methods were able to significantly influence the actual behavior of impulsive students, they were not influential in changing their attitudes, at least in terms of the measures used here.

Discussion

In an important sense, the study may be viewed as one in the field of community mental health, and the findings of the study demonstrated the promise of using preventative treatment procedures through diagnostic pre-testing. This preventative treatment approach involves several problems not usually encountered when counseling is provided to students who have already experienced failure. The first problem is motivating seemingly well persons to accept treatment. The second problem is devising therapeutic procedures to treat the specific causes of underachievement, as

revealed by the diagnostic tests. For example, many persons underachieve, not because they are impulsive, but rather because they are anxious, and for these persons the treatment of choice might involve tranquilizing drugs, counseling, or relaxation training.

In the present study, underachievement among impulsive students was attributed to a restless, sensation-seeking style of life which we assumed interfered with day-to-day diligence in academic matters. The paid-math condition was devised in an attempt to disrupt this cycle by offering impulsive students money as an incentive to study. Money was used because prior research had found that material rewards had strong potential reinforcement value for impulsive persons.

The paid-math condition was found to be partially effective in that only the grades of more intelligent impulsive students were improved. However at this level of intelligence the mathematics grades (though not overall grades) of non-impulsive students were also elevated, suggesting some generality for this procedure. Paying students with average intelligence to study mathematics on the other hand, was not effective. A possible explanation for this lack of effectiveness was that we made no attempt to tutor students by briefly explaining their errors on the weekly math quiz. To the extent a student had real difficulties in understanding the mathematics course, the paid-math condition would not have been too much help. Its focus was on improving study behaviors, rather than on improving comprehension. In further studies we will investigate whether tutoring students on quiz items answered incorrectly will improve grades among average intelligence students.

It was also found that paying impulsive students to attend weekly group counseling improved their academic performance. This finding was not expected. The literature has generally stressed the difficulties of conducting therapy among persons with characterological deficits. As was indicated in the introduction, the problems stressed in the literature center around two areas, without any clear distinction between them. The first problem is concerned with the unwillingness of these individuals to enter therapy, because they do not experience strong or lasting states of psychological discomfort. It is generally accepted that these distressful affective states are the basic reasons for seeking therapeutic help. This problem was dealt with in the present study by using money as an incentive to remain in therapy.

The second problem emphasized in the literature is the difficulty of changing the behavior of character-disordered individuals, once they are in therapy. This difficulty has often been attributed to aversive properties attached to close interpersonal relationships.

In the present study, the continual association of money with the counseling situation may have served to reduce the aversiveness of that situation, so new behaviors could be learned.

The use of money as an incentive to guide students into the various treatment conditions deserves further comment. Psychologists generally tend to de-emphasize money as a source of motivation in our society. Explanations of behavior generally favor the fulfillment of non-economic kinds of need. Yet even a cursory examination of our society reveals how

behavior is influenced by attempts to satisfy economic goals. In the present study only one non-impulsive student refused to participate in the study. Furthermore students voluntarily attended counseling for 12 weeks -- a time period far beyond that found in most studies of counseling. This refusal and voluntary attendance rate is impressive when compared to other studies that have attempted to enlist persons for counseling who were not experiencing adjustment problems at the time of recruitment. For instance, Spielberger, Weitz and Denny (1962) invited 112 incoming freshmen who were high scorers on the Taylor MAS to participate in voluntary group counseling; 56 (50%) refused. Of those who participated only 34% attended counseling with any great frequency. Ewing and Gilbert (1967) invited 118 high aptitude freshmen to participate in four counseling sessions; 28 (24%) refused. The mean number of counseling sessions attended was 3.26. Ewing and Gilbert's study is also of interest because of their finding that the non-volunteer most consistently underachieved in grades. Spielberger, Weitz and Denny also found that students who quit counseling had the lowest grades. Hence the very persons who would most benefit from counseling were those that refused to participate, or dropped out.

Not infrequently the objection raised to the use of money for desired performance is that it would serve primarily to reinforce and consolidate the essential characterological immaturity of subjects. It is feared that tangible reinforcements would cause the person to become dependent on them so that he would not work unless material reinforcements were supplied. Anderson (1967) found no evidence for this view in a recent review of this question. The present study also found no evidence for this view. Students accepted the money as a scholarship which required work in return. Indeed compared to the usual lump-sum forms of scholarship payments which demand no contingent efforts from the recipient, this use of money appears to have much to recommend it.

A final point concerns the process through which the grades of impulsive students in both treatment conditions were raised. It was clear from the comments of the counselors that the majority of students only participated to receive the money. Many weeks were spent in merely trying to decide what to talk about. In the counselors' opinions a genuine therapeutic relationship was not established. Yet despite these beliefs, grades of impulsive students were raised. Why? Similarly despite the fact that we paid bright impulsive students only to study mathematics, grades in their remaining courses were also elevated. Again we ask why? A tentative explanation is that in comparison to the control condition, both treatment conditions forced impulsive students to pay attention to their school progress on a continuing basis. In the control condition impulsive students could put off these considerations and not concern themselves with their progress until final examinations. Perhaps the major contribution of both treatments resided in re-structuring impulsive students attention to the importance of not falling too far behind in their work.

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APPENDIX

DESCRIPTIONS OF TESTS

Insolence Scale

This is a 41-item paper and pencil biographical type inventory. The scale is based upon 27 of the 58 items in Torrance and Ziller's (1957) Risk Scale to which have been added 14 additional items describing aspects of childhood behavior. All items were selected on the basis of their ability to identify underachievers of normal intelligence and better. Despite the empirical nature of the item selection, the items clearly reveal a developmental basis for the current behaviors of subjects. That is, the items are concerned with early relations with school authority and family, engaging in thrill-seeking behaviors, early interest in girls and pleasure-seeking activities, temper control and ability to delay gratification.

Evidence of the construct validity of the scale can be summarized in terms of a cluster of behaviors usually considered to define the dimension of impulsivity.

a. Performance in socially defined achievement roles. Among more intelligent persons, the scale was related to dropping out of high school (Kipnis, 1965a), unsatisfactory job performance (Kipnis, 1965b), and underachievement and failure at the University of Delaware and at Temple University (Kipnis, 1968b; Kipnis, Lane and Berger, in press).

b. Anti-social behavior. Stewart and Resnick (1969) have found that 90% of a group of institutionalized teen-age delinquents had high Third Insolence Scale scores while only 30% of a control high school sample had high third scores ($r_{bis} = .76, p < .01$).

c. Acceptance of Conventional Social Values. High scorers on the Insolence Scale were found to deny the importance of internally or externally imposed norms that regulate behavior (Kipnis, 1968a,b). High scorers on the Insolence Scale were also found to have a strong materialistic orientation (Kipnis, 1968a).

d. Affective Response and Self-Control. High scorers on the Insolence Scale reported experiencing less embarrassment, or fear, or shame in situations that have the potential for evoking such responses (Kipnis, 1968a,b). In addition high scorers were found to be sensation-seekers, easily bored, who distorted the passage of unfilled time and had difficulty controlling aggressive impulses (Kipnis, 1968a).

e. Interpersonal Relations. High Insolence Scale scorers were exploitive and dominant in their relations with peers. They were not easily influenced by others to change their minds, were resistant to authority, were out-going and gregarious, and socially oriented. Low scores appeared inhibited and somewhat gauche in their interpersonal relations (Jenkins, Kipnis and Wagner 1967, Kipnis, 1968a).

f. Convergence with Related Concepts. The Insolence Scale correlated $+.66$ with psychiatrists' diagnosis of psychopathy among incoming psychiatric patients at the Bethesda Naval Hospital (Kipnis, 1965a). The scale correlated $+.45$ with the Socialization Scale (scoring key reversed so that high scores indicate poorly socialized), $+.41$ with the extraversion scale of the Maudsley, $+.52$ with the Sensation-seeking scale of Zuckerman $+.29$ and $+.25$ with the Pd and Ma scales of the MMPI. The scale does not correlate with age or general intelligence as estimated by both the Navy's General Classification Test and the Scholastic Aptitude Test.

Socialization Scale

This is a 51-item true-false attitude scale from the CPI. Gough (1965) has described the scale as identifying individuals along a continuum of asocial to social behavior and as able to forecast the likelihood that any person will violate the rules and norms of his culture. Results of a wide variety of studies, summarized in Gough (1965) indicate that persons described as asocial by the scale do indeed exhibit such behaviors as delinquency, underachievement in school, violations of paroles, and show a lack of responsiveness to social reinforcement.